WHAT IS CLAIMED IS:

1. A method for computing volumetric perfusion in a spatially stationary organ using a computed tomography (CT) imaging system having a field of view, said method comprising:

positioning an area detector such that the area detector encompasses a spatially stationary organ within the field of view of the imaging system for all view angles;

operating the CT imaging system in a cine mode to acquire a plurality of projection data representative of the tissue dynamics in the spatially stationary organ;

generating reconstructed data of the contrast dynamics of the tissue using the projection data;

temporally filtering respective signals from volume elements of the reconstructed data, the signals from volume elements being representative of the tissue dynamics; and,

computing the volumetric perfusion in the organ using the temporally filtered signals from volume elements .

2. A method in accordance with Claim 1 wherein the filtering step is adapted to reduce noise in the images to allow a reduction in radiation dose applied during imaging.

3. A method in accordance with Claim 1 wherein the filtering step is adapted to reduce noise.

4. A computed tomographic (CT) imaging system for computing volumetric perfusion in a spatially stationary organ comprising:

a radiation source;

an area detector; and

a computer operationally coupled to said radiation source and said area detector, said computer configured to:

position an area detector such that the area detector encompasses a spatially stationary organ within a field of view of the imaging system for all view angles;

operate the CT imaging system in a cine mode to acquire a plurality of projection data representative of the tissue dynamics in the spatially stationary organ;

generate reconstructed data of the contrast dynamics of the tissue using the projection data; and

temporally filter respective signals from volume elements of the reconstructed data to reduce noise, the signals from volume elements being representative of the tissue dynamics; and

compute the volumetric perfusion in the organ using the temporally filtered signals from volume elements.

5. A CT imaging system in accordance with Claim 4 wherein the computer filters the reconstructed data to reduce noise in the images and allows a reduction in radiation dose applied during imaging.

6. A computer readable medium encoded with a program configured to instruct a computer to:

position an area detector such that the area detector encompasses a spatially stationary organ within a field of view of the imaging system for all view angles;

operate the CT imaging system in a cine mode to acquire a plurality of projection data representative of the tissue dynamics in the spatially stationary organ;

generate reconstructions of the contrast dynamics of the tissue using the projection data;

temporally filter respective signals from volume elements of the reconstructions to reduce noise, the signals from volume elements being representative of the tissue dynamics; and,

compute the volumetric perfusion in the organ using the temporally filtered signals from volume elements.

7. A computer readable medium in accordance with Claim 6 further encoded to filter the volume elements to allow a reduction in radiation dose applied during imaging.

8. A method for computing volumetric perfusion in a spatially stationary organ using a computed tomography (CT) imaging system having a field of view, said method comprising:

positioning an area detector such that the area detector encompasses a spatially stationary organ within the field of view of the imaging system for all view angles;

operating the CT imaging system in a cine mode to acquire a plurality of processed transmission measurements representative of the tissue dynamics in the spatially stationary organ;

filtering the processed transmission measurements at each view angle to reduce noise in the measurements, thereby enabling generation of projection data with improved signal-to-noise ratio;

generating reconstructions of the contrast dynamics of the tissue using the projection data; and

computing the volumetric perfusion in the organ using the reconstructions representative of the tissue dynamics.

9. A method in accordance with Claim 8 wherein filtering the processed transmission measurements at each view angle reduces noise in the measurements and allows a reduction in the dose applied to the patient.

10. A computed tomographic (CT) imaging system for computing volumetric perfusion in a spatially stationary organ comprising:

a radiation source;

an area detector; and

a computer operationally coupled to said radiation source and said area detector, said computer configured to:

position an area detector such that the area detector encompasses a spatially stationary organ within a field of view of the imaging system for all view angles;

operate the CT imaging system in a cine mode to acquire a plurality of processed transmission measurements representative of the tissue dynamics in the spatially stationary organ;

filter the processed transmission measurements at each view angle to reduce noise in the measurements, thereby enabling generation of projections with improved signal-to-noise ratio;

generate reconstructions of the contrast dynamics of the tissue using the projection measurements; and

compute the volumetric perfusion in the organ using the reconstructions representative of the tissue dynamics.

11. A CT imaging system in accordance with Claim 10 wherein filtering the processed transmission measurements at each view angle to reduce noise in the measurements allows a reduction in the dose applied to the patient.

12. A method in accordance with Claim 8 further comprising interpolating the plurality of processed transmission measurements to a particular instant in time, thereby enabling generation of reconstructions with improved temporal resolution.

13. A CT imaging system in accordance with Claim 10 further comprising interpolating the plurality of processed transmission measurements to a particular instant in time, thereby enabling generation of reconstructions with improved temporal resolution.

14. A method for computing volumetric perfusion in a spatially stationary organ using a computed tomography (CT) imaging system having a field of view, said method comprising:

positioning an area detector such that the area detector encompasses a spatially stationary organ within the field of view of the imaging system for all view angles;

operating the CT imaging system in a cine mode to acquire a plurality of processed transmission measurements representative of the tissue dynamics in the spatially stationary organ;

interpolating the processed transmission measurements at each view angle to a particular instant in time, thereby enabling generation of time-resolved projection data;

generating reconstructions of the contrast dynamics of the tissue using the projection data; and,

computing the volumetric perfusion in the organ using the reconstructions representative of the tissue dynamics.

15. A computed tomographic (CT) imaging system for computing volumetric perfusion in a spatially stationary organ comprising:

a radiation source;

an area detector; and

a computer operationally coupled to said radiation source and said area detector, said computer configured to:

position an area detector such that the area detector encompasses a spatially stationary organ within a field of view of the imaging system for all view angles;

operate the CT imaging system in a cine mode to acquire a plurality of processed transmission measurements representative of the tissue dynamics in the spatially stationary organ;

interpolate the processed transmission measurements at each view angle to a particular instant in time, thereby enabling generation of time-resolved projection data;

generate reconstructions of the contrast dynamics of the tissue using the projection data; and

compute the volumetric perfusion in the organ using the reconstructions representative of the tissue dynamics.